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ABSTRACT

The purpose of this study was to investigate the feasibility of creating a short form of the Wechsler Intelligence Scale for Children-Revised (WISC-R) for use in a clinical setting with disabled readers. The subjects were 100 clients ages six to sixteen of the Belser-Parton Reading Center at the University of Alabama whose files contained scores for all ten subtests of the WISC-R, a Full Scale Intelligence Quotient (FSIQ), a Sucher-Allred Reading Placement Inventory, a St. Louis Spelling Test, and the Woodcock Reading Mastery Tests. Initially, the reading test scores and the FSIQ's were used to verify the existence of a reading disability in the subjects. A multiple-R calculation was performed using a program from the Statistical Package for the Social Sciences on the University's Univac 1100 computer to determine the extent of correlation between the scores on the WISC-R subtests and the FSIQ's. The Comprehension, Vocabulary, Object Assembly, and Arithmetic subtests correlated highly with the FSIQ's. Based on these results, it appears that this tetrad of subtests may constitute a valid short form of the WISC-R for use in a clinical setting with disabled readers. (Author)

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A STUDY INVESTIGATING THE FEASIBILITY OF CREATING A SHORT FORM OF THE WISC-R FOR DISABLED READERS

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INTRODUCTION

During the past four decades, researchers and practioners have developed and used different short forms of the Wechsler Intelligence Scales. Much of the work with short forms has involved the use of the Wechsler Adult Intelligence Scale (WAIS). Maxwell (1957); Satz and Mogel (1962); Stricker, Merbaum, and Tangeman (1968); Silverstein (1968); Wildman and Wildman (1977); and Corotto and Curnutt (1978) all conducted studies employing a short form of the WAIS for general use in assessing the intelligence of adults. Many others developed short forms of the WAIS designed for selected subjects: psychiatric patients (Finch, Thornton, and Montgomery, 1974); nonclinical types (Hafner, Nelson, Corotto, and Curnutt, 1979); and the blind (King and Bashey, 1978).

Numerous short-form versions of the Wechsler Intelligence Scale for Children (WISC) have emerged over the years. Short forms of the WISC were created for use in assessing the intelligence of the mentally retarded (Finley and Thompson, 1958; Cole, Williams, Nix, and Litaker, 1961; Finch and Childress, 1975); children of average intellegence (Wight and Sandry, 1962); children of subaverage intelligence (Carleton and Stacey, 1954); emotionally disturbed children (Enburg, Rowley, and Stone, 1961; and Yudin, 1966); the intellectually gifted (Finley and Thompson, 1966); and black children (Resnick and Entin, 1971).

After the WISC-R, the revised version of the WISC, was developed in 1974, many short-form tests were created from it. These were designed to assess the

intelligence of mentally retarded children (Erikson and Byrd, 1978); children with behavior problems (Finch, Kendall, Spirito, Montgomery, and Schwartz, 1979); and intellectually gifted students (Killan and Hughes, 1978; Dirks, Wessels, Quenon, and Quarforth, 1980; and Karnes and Brown, 1981).

Although many short forms were developed over the years for atypical learners, i.e., emotionally disturbed, behavior problems, mentally retarded, gifted, etc., few have been developed for students having disabilities in subject areas. This especially applies to reading, since the researchers found only one article (Clements, 1965) describing the development of a WISC short form which could be used in estimating the intelligence (potential) of disabled readers. The paucity of research in this area provided the impetus for the present study.

METHOD

Subjects

The records of 100 clients ages six to sixteen of the Belser-Parton Reading Center at the University of Alabama were used for this study. Only those records were used which contained all of the following:

(1) Scores on all ten subtests of the WISC-R and an FSIQ

(2) A complete reading battery consisting of (a) Sucher-Allred Reading Placement Inventory, (b) St. Louis Spelling Test, (c) Woodcock Reading Mastery Tests.

Clients at the Reading Center are students attending local schools who experience reading difficulty and score between 75 and 140 on the Wechsler Intelligence Scale for Children-Revised. All scores for the subjects were obtained from the files of the Center. All tests were administered by

professional psychometrists as part of a formal screening process. Thus, the scores acquired represent an accurate profile of the clients before they were tutored. The students in the study were identified as being disabled readers, since a significant disparity existed between their reading performance levels (as measured by the tests in the reading battery) and their Full Scale IQ's (potential).

Design

Data for each subject was punched on Hollerith cards as input for programs called from the Statistical Package for the Social Sciences and run on the University of Alabama's Univac 1100 mainframe computer. A multiple-R program from the SPSS package was run to determine the extent of correlation between the WISC-R subtest scores and the Full Scale IQ's of the subjects. This compared the dependent variable of FSIQ with each independent variable, the WISC-R subtest scores, obtaining values for multiple-R(Mult-R), R-squared(R Sqr), the change in R-square(Rsq Ch), simple-r(Smpl r), B, and Beta. The values of B are coefficients in an equation that should predict FSIQ from subtest scores of disabled readers. Each WISC-R subtest score was entered as a step in the equation with the first step having the greatest correlation and each succeeding step having less correlation. This continued until all ten subtests had entered the equation. The value for the constant was then calculated by the program. The results were presented in tables at each step and a summary table after all subtest variables had entered the equation. A pattern developed in which four subtests showed a multiple correlation of approximately .92 with the FSIQ. They were Comprehension, Vocabulary, Object Assembly, and Arithmetic.

Materials

The major materials used in the study included a screening series and the Statistical Package for the Social Sciences. The screening series includes a Psychometric Evaluation, from which the Wechsler Intelligence Scale for Children-Revised scores were obtained, and a reading battery, from which the client's scores on the Sucher-Allred Reading Placement Inventory, St. Louis Spelling Test, and Woodcock Reading Mastery Tests were obtained. The SPSS is part of the system software on the academic computer at the University of Alabama, a Univac 1100. All data were input by Hollerith cards, one card for each client.

Procedure

The data were taken from the tests administered to all prospective clients of the Belser-Parton Reading Center. This information was transferred to Hollerith cards. After the cards were punched and checked, a program was run from the SPSS which performed a multiple regression correlation with the FSIQ scores as dependent variables and scores on the WISC-R subtests as independent variables. This calculation determined values for multiple-R(Mult-R), R-squared(R Sqr), the change in R-squared(Rsq Ch), simple-r(Smpl r), B, and Beta. This produced a list of the subtests ranked by their correlation with the FSIQ.

RESULTS

FSIQ WITH WISC-R SUBTESTS

MULTIPLE REGRESSION SUMMARY TABLE

Dependent Variable: Full Scale IQ

Variable	Mult-R	R Sqr	Rsq Ch	Smpl r	B	BETA
COMPREHENSION	.68183	.46490	.46490	.68183	.1302712+001	.30314
VOCABULARY	.80860	.65383	.18893	.68072	.1741833+001	.35602
OBJECT ASSEMBLY	.87688	.76893	.11510	.57612	.1330766+001	.32937
ARITHMETIC	.91983	.84608	.07715	.65491	.1490665+001	.31651
CONSTANT					.4118395+002	

DESCRIPTIVE STATISTICS SUMMARY TABLE

Variable	Mean	Std Dev
COMPREHENSION	10.750	2.492
VOCABULARY	9.620	2.554
OBJECT ASSEMBLY	10.290	3.092
ARITHMETIC	9.440	2.653
FSIQ	99.710	12.493

DISCUSSION

The results support the feasibility of creating a short form of the Wechsler Intelligence Scale for Children-Revised for use in a clinical setting with disabled readers. Analysis of the multiple regression correlations, shown in the Multiple Regression Summary Table, suggests a tetrad of subtests consisting of Comprehension, Vocabulary, Object Assembly, and Arithmetic represents the most efficient short-form version of the WISC-R for use with disabled readers. Of the ten subtests comprising the WISC-R, these four subtests accounted for approximately 85% of the FSIQ variance. The remaining six subtests did not contribute sufficiently to justify inclusion in an

abbreviated test.

The correlation of the Comprehension and Vocabulary subtests with the FSIQ, while expected, exceeded correlations reported in other short-form studies. This probably stems from the normal distribution of subject FSIQ's as shown in the Descriptive Statistics Summary Table. Consistent with a number of previous studies, the scores on the verbal subtests seem to be more closely related to the FSIQ than the scores on the performance subtests.

Since the four subtests do correlate highly with the FSIQ of the WISC-R, it appears that this tetrad may represent a valid short form. Caution is, however, recommended for a number of reasons. First, high correlations alone may not constitute proof that a short form is valid. As Stricker, Merbaum, and Tangeman (1969) stated, "High correlations may mask a constant error" (p.170). Second, short forms quite evidently produce less diagnostic data, and this may negatively affect the quality of the information acquired. Anastasi (1968) stated, "abbreviated scales...should be used sparingly because they sacrifice much of the qualitative information that an individual clinical instrument should provide" (p.282). Finally, faulty logic is being applied when professionals attempt to acquire the same depth of analysis using far less information. Although this process looks good on paper, few would argue that the logic is sound. As a result, some of our top authorities recommend using more information instead of less. Wechsler (1958) stated that, except for screening purposes, he "would not recommend short scales...Not fewer but more tests are needed" (p.112).

In the final analysis, it appears that a valid short form of the WISC-R for use with disabled readers has been created. However, in

light of the deficiencies associated with abbreviated tests, extensive substituting of this form for the WISC-R is not recommended. Instead, this abbreviated test might be used as a screening instrument, thereby enabling officials to acquire I.Q. estimates more quickly and, as a result, more economically. When employed in this way, the use of the instrument could be justified.

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